

2026年度中国发明协会发明创新奖公示内容

项目名称：油田注汽锅炉烟道气辅助稠油热采技术及专用设备

提名者：中国石油大学（华东）

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论文情况

序号	论文名称	刊名	作者	影响因子
1	Experimental analysis of the stimulation mechanism of CO ₂ -assisted steam flooding in ultra-heavy oil reservoirs and its significance in carbon sequestration	Fuel	Zihan Gu, Chao Zhang, Teng Lu, Haitao Wang, Zhaomin Li, Hongyuan Wang	7.5
2	Thermal flue gas utilization in delivering unconventional geo-energy	Fuel	Songyan Li, Rui Han, Zhoujie Wang, Zhaomin Li, Na Zhang, Kaiqiang Zhang	7.5
3	Microscopic Mechanical Model Analysis and Visualization Investigation of SiO ₂ Nanoparticle/HPAM Polymer Foam Liquid Film Displacing Heavy Oil	Langmuir	Zihan Gu, Zhaomin Li, Zhengxiao Xu, Chao Zhang	3.9
4	A novel system for reducing CO ₂ -crude oil minimum miscibility pressure with CO ₂ -soluble surfactants	Fuel	Chao Zhang, Linghui Xi, Pingkeng Wu, Zhaomin Li	7.5
5	Experimental investigation of innovative superheated vapor extraction technique in heavy oil reservoirs: A two-dimensional visual analysis	Energy	Songyan Li, Rui Han, Peng Wang, Zijian Cao, Zhaomin Li, Guangwei Ren	9.4
6	Analysis of Factors on Flue Gas Assisted SAGD Based on a 2D Visualization Physical Model	Energy & Fuels	Zhuangzhuang Wang, Teng Lu, Zhaomin Li, Fei Wang, Songyan Li, Hailong Chen	5.3
7	New insight into CO ₂ huff-n-puff process for extraheavy oil recovery via viscosity reducer agents: An experimental study	Journal of CO ₂ Utilization	Songyan Li, Chen Lu, Mingxuan Wu, Zhiheng Hu, Zhaomin Li, Zhiyuan Wang	8.4
8	A novel strategy to reduce carbon emissions of heavy oil thermal recovery: condensation heat transfer performance of flue gas-assisted steam flooding	Applied Thermal Engineering	Zhoujie Wang, Songyan Li, Zhaomin Li	6.9

9	Experimental investigation on microscopic force measurement of foam and heavy oil	Langmuir	Zihan Gu, Zhaomin Li, Zhengxiao Xu, Chen Lu, Chenwei Liu, Youwei Jiang, Teng Lu	3.9
10	基于分形理论的烟道气强化蒸汽传热机理研究	中南大学学报(自然科学版)	张超, 顾子涵, 宋京承, 伦增珉, 王海涛, 李兆敏	2.043
<p>填写说明</p> <p>1、只填写近五年发表的论文，不超过 10 篇；</p> <p>2、至少有一篇中文论文；</p> <p>3、未列入完成人的作者应对本奖项知情同意。</p>				

专利情况

序号	专利名称	专利号	附件	法律状况
1	CCUS (Carbon capture utilization and storage) system for exploiting thickened oil reservoirs based on optimal flue gas CO ₂ enrichment ratio and working method thereof	US11208872 B2	附件 1	授权
2	Foam solution and preparation thereof used for profile control and plugging in heavy oil thermal recovery process and method of profile control and plugging	US10941334 B2	附件 2	授权
3	Inorganic fine particle reinforced foam system for oil-gas field and preparation method thereof	US9777210 B2	附件 3	授权
4	Super heavy oil development method for strengthening SAGD steam chamber to break through low physical property reservoir	US11078768 B2	附件 4	授权
5	Apparatus for preparing compound dispersoids of hydrophobic nanoparticles and surfactants and application thereof	US10071349 B2	附件 5	授权
6	一种基于最优烟气 CO ₂ 富集率开采稠油油藏的 CCUS 系统及其工作方法	ZL201710877108.2	附件 6	授权
7	一种基于烟道气组分优化蒸汽驱的采油方法	ZL202210258537.2	附件 7	授权
8	一种基于二氧化碳辅助 SAGD 开采超稠油油藏的 CCUS 系统及方法	ZL201310175405.4	附件 8	授权
9	在稠油热采过程中用于调剖封堵的泡沫溶液及其制备方法和泡沫体系以及调剖封堵的方法	ZL201910344008.2	附件 9	授权
10	一种基于水力引射技术的蒸汽、烟气辅助稠油开采系统及工艺方法	ZL201510227342.1	附件 10	授权

填写说明：

- 1、填写与项目相关的专利 10 个以内，按照重要程度排序；
- 2、法律状态填写“公开”或“授权”两种；
- 3、提供专利摘要页作为附件，本表填写附件编号。